

South Bay, Lake Okeechobee, Fla., May 1, 2, 1912; 3 males, 3 females.

Marco, Fla., April 17, 1912; 1 nymph.

Everglade, Fla., June 1912; 1 female.

***Orocharis saulcyi* (Guerin).**

Useppa Island, Lee County, Fla., April 1912; 1 male.

Everglade, Fla., April 6, 1912; 1 male, 1 female.

Useppa Island is the most northern locality from which this West Indian type has been recorded.

***Tafalisca lurida* Walker.**

Punta Gorda, Fla., Nov. 17, 1911; 1 nymph.

Naples, Fla. (Scudder Collection), 1 nymph.

Marco, Fla., April 17, 1912; 1 nymph.

The Marco specimen is a male in the instar preceding maturity, while the Punta Gorda nymph is a much less developed female.

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## THE CRANEFLIES COLLECTED IN COSTA RICA BY DR. P. P. CALVERT. (TIPULIDÆ, DIPTERA).

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While collecting the dragonfly material for the *Biologia Centrali-Americana*, Dr. P. P. Calvert secured a very considerable number of specimens of other orders of insects. A few of the crane-flies that were taken have been considered by the author in other papers.<sup>1</sup> The majority of the new forms have been left for this paper, however, and a complete list of the material secured is herein included. The crane-flies of the collection form a small but interesting lot and I am indebted to Dr. Calvert and to Mr. E. T. Cresson, Jr., for the privilege of studying these forms. The type-material is in the collection of the American Entomological Society at the Academy of Natural Sciences, Philadelphia.

<sup>1</sup> *Vide* Bull. Brook. Ent. Soc., Vol. 8, Oct., 1912; Proc. U. S. Nat. Mus., Vol. 44, No. 1966, Apr., 1913.

## SUBFAMILY LIMNOBINÆ.

## Tribe LIMNOBINI.

Genus **DICRANOMYIA** Stephens.**Dicranomyia omissa** Alexander.

One male and one female specimen from near Cartago, C. R., altitude 5,000 feet. They were taken on Dec. 15, 1909, over mud on the south slope of Irazu, by Dr. P. P. Calvert. One female from the Rio Siquiaries, Turrucare, C. R., on Dec. 19, 1909. The specimens from Irazu are much larger than the type but undoubtedly belong to this same species.

Genus **RHIPIDIA** Meigen.Subgenus **Conorhipidia** new subgenus.

I propose this new subgeneric term for those species of the genus in which the mesonotal præscutum is produced dorsad into a prominent conical protuberance. Two species are known to me, *conica* Alexander, which is the type of the subgenus, and the smaller form described below as *punctipennis*.

**Rhipidia (Conorhipidia) punctipennis** new species.

Thoracic mesonotum produced into a conical point; wings with dark markings small and sparse.

Female, length, 5.3–5.6 mm.; wing, 6.8 mm.

Female.—Rostrum and palpi dark brown; the antennæ light brown with pale hairs, the petioles of each segment pale. Head light gray.

Pronotum and cervical sclerites brown. Mesonotal præscutum with a conspicuous conical protuberance as in the subgenus; pale yellow in front, rich brown behind the conical point; scutum, scutellum and postnotum brown. Pleuræ light yellow, except the meso- and meta-pleuræ above the coxæ, which are brown; a shiny brown spot before the root of the wing and another near the stigma. Halteres pale, the knob scarcely darker. Legs, fore coxæ yellow, hind and middle coxæ brown; trochanters, femora and tibiæ light yellow, the tarsi a little more darkened. Wings pale yellowish hyaline with a few scattered brown dots as follows: one at the origin of *Rs*; one on crossvein *r*; one at the base of *R* 4 + 5; one at the fork of *Cu* on *Cui* 1, indistinct dots at the tips of the veins; a rounded brown spot before the tip of 2*d anal*. Venation as in fig. 1.

Abdomen yellowish brown with a row of about five brown marks on the pleuræ, the most anterior of which is very small, rounded.

Holotype, ♀, Rio Siquiaries, Turrucare, C. R., alt., 2,200 ft.; Aug. 14, '09; (Dr. P. P. Calvert).

Paratype, ♀, with the type.

Type in the collection Acad. Nat. Sci. Phil.; the paratype in the author's collection. The shape of the thorax, from the side, is shown in Fig. 10.

**Rhipidia (Arhipidia) domestica** Osten Sacken.

One male and two females from near Cartago, C. R., altitude 5,000 ft.; Dec. 15, '09; they were taken on the south slope of Irazu, over mud. One male from Cartago, Oct. 27, '09.

**Rhipidia (Rhipidia) calverti** Alexander.

The type, a male, was taken at Bonnefil farm, Rio Surubres, C. R., alt. 700 feet; Oct. 29, '09, by Dr. Calvert.<sup>1</sup>

**Rhipidia (Rhipidia) costalis** Williston.

One very small female of this species from Rio Siquiaries, Turrucares, C. R., alt. 2,200 ft., Aug. 14, '09. This is the first representative of the species that I have seen and a figure of its venation is herein included (Fig. 2). The basal deflection of  $Cu_1$  is at the fork of  $M$  as in this group of species.

Genus **GERANOMYIA** Haliday.

**Geranomyia tristis** Loew.

Two specimens, one of each sex, from Cache, C. R., Mar. 3, '10.

**Geranomyia** sp.

One female from Alajuela, C. R., alt. 3,100 ft., Sept. 15, '09. The specimen is of a small reddish form with hyaline wings but the condition of the material forbids closer determination.

Tribe **ANTOCHINI**.

Genus **TEUCHOLABIS** Osten Sacken.

**Teucholabis trifasciata** Enderlein.

One female of this species from Alajuela, C. R., alt. 3,100 ft., Sept. 15, '09. As I have indicated in another paper, this species is the same as the *Limnobia bifasciata* of Fabricius.

Genus **TOXORHINA** Loew.

**Toxorhina centralis** Alexander.

One female from Cache, C. R., near a stagnant pool, bank of the Rio Reventazon; Mar. 10, '10.

<sup>1</sup> See Bull. Brook. Ent. Soc., Vol. 8, Oct. 1912, p. 8-10, fig. *d* and *h*.

## Tribe ERIOPTERINI.

Genus **RHABDOMASTIX** Skuse.Subgenus **Rhabdomastix** Skuse.**Rhabdomastix (Rhabdomastix) septentrionalis**, new species.

Antennæ of the male very long; color of the body dark brown; the stigmal spot of the wings pale.

Male, length, 6 mm.; wing, 7 mm.; antennæ (only twelve segments remaining) 15.5 mm.

Male.—Antennæ with the basal segment very large, light brown, flagellum yellowish brown. Head brown with a light gray bloom.

Mesonotum dark brown, the pseudosutural fovea not conspicuous; scutum, scutellum and postnotum light brown. Pleuræ light brown with a sparse grayish bloom. Halteres pale yellow. Legs, coxæ, brown with a sparse gray bloom, trochanters dull yellow, femora dull yellow, tibiæ light brown, tarsi brown. Wings light gray, stigma oval, gray, rather indistinct, veins dark brown. Venation (see fig. 3): *R* 2 + 3, long, rather longer than vein *R* 2 alone.

Abdomen dark brown, the apical margins of the sclerites paler, brown; hypopygium yellowish.

Holotype, male, Alajuela, C. R.: alt. 3,100 ft.; Sept. 15, '09 (Dr. P. P. Calvert).

Type in the collection Acad. Nat. Sci. Phil.

Related to *R. (R.) illudens* Alexander (Bolivia)<sup>1</sup> but much smaller and dark brown in color, the thorax not clear gray with prominent pseudosutural foveæ. This is the most northerly representative of the subgenus yet made known.

Genus **GNOPHOMYIA** Osten Sacken.**Gnophomyia subhyalina** Alexander.

One female from Alajuela, C. R., alt., 3,100 ft., on Sept. 15, '09, by Dr. Calvert.

Genus **MOLOPHILUS** Curtis.**Molophilus orion**, new species.

Antennæ of the male moderately long; ventral appendage of the hypopygium in the shape of a long, paddle-like arm densely clothed with a brush of hairs on its inner face.

Male, length, 3.8 mm.; wing 4.4 mm.

Female, length, 4.4 mm.; wing 5 mm.

Male.—Rostrum and palpi brown; antennæ rather short, if bent backward not extending beyond the wing-root; the flagellar segments oval; antennæ brown covered with a dense pale pubescence; head grayish brown.

<sup>1</sup> Ent. News, 1914, Vol. XXV, pp. 210, 211; pl. 9, fig. 6.

Mesonotal præscutum grayish brown, the pseudosutural foveæ prominent, elongate, reddish brown; scutum, scutellum, postnotum and pleuræ grayish brown. Halteres rather long, uniform light yellow. Legs, coxæ and trochanters yellowish brown, femora and tibiæ similar, the tips of the individual segments not infuscated, tarsi brown. Wings rather uniform light yellow, the veins pale. Venation as in fig. 4.

Abdomen brown. Hypopygium about as in other species of the genus except the ventral appendage (see fig. 9) which here is long and slender, chitinized heavily, and having its inner or cephalic margin provided with a long dense brush of hairs. The anal lobe is provided with a dense covering of long pale hairs.

Female, similar but larger.

Holotype, male, Alajuela, C. R., alt. 3,100 ft., Sept. 15, '09 (Dr. P. P. Calvert).

Allotype, female, with the type.

Types in the collection Acad. Nat. Sci. Phil.

The numerous species of *Molophilus* bear a great superficial resemblance to one another and most of the species can only be separated by a comparative study of the male genitalia. The ventral apical appendage is heavily chitinized and very various in shape in the different species and offers the best criterion for specific determination. The only other Central American *Molophilus* described is *M. guatemalensis* Alexander<sup>1</sup> which I have figured in Entomological News, Vol. XXV, pl. 9, fig. 3, 1914; as shown by the figure, the ventral appendages of the two species are entirely different.

#### Genus **ERIOPTERA** Meigen.

##### Subgenus **Mesocyphona** Osten Sacken.

##### **Erioptera (Mesocyphona) parva** Osten Sacken.

Two males and two females from Alajuela, C. R., Sept. 15, '09.

##### **Erioptera (Mesocyphona) caloptera femoranigra** Alexander.

Many specimens of both sexes, including the type material, from Juan Vinas, C. R., July 21, '09; they were attracted to a light on a rainy evening. Also from Cache, C. R., near the Rio Reventazon alt. 3,450 ft., Mar. 4, '10, and at Alajuela, C. R., alt., 3,100 ft., Sept. 15, '09, one female specimen. Eleven specimens from the type locality now before me have the dark bands on the femora much paler and less intense, but undoubtedly belong here.

<sup>1</sup> Proc. U. S. Nat. Mus., Vol. 44, p. 511, 1913.

Genus **GONOMYIA** Meigen.Subgenus **Leiponeura** Skuse.**Gonomyia (Leiponeura) recurvata**, new species.

*Pleuralis* group; male hypopygium having two chitinized points on the pleurites; dorsal gonapophyses long, slender, almost straight; ventral gonapophyses bent cephalad.

Male, length, 4.4 mm.; wing, 3.7 mm.

Female, length, 5.7 mm.; wing, 5 mm.

Male.—Rostrum and palpi brown; antennæ with the basal segments yellow with a faint brown suffusion, flagellum brown; head pale yellowish.

Mesonotal præscutum light brownish orange, the lateral margin very pale yellow separated from the orange by a very narrow dark brown line which is not apparent in front; scutellum pale, whitish, with a brown median line. Pleuræ having the pale line that is enclosed by the pleural stripes very pale, almost white, the lower dark pleural stripe broad. Halteres light brown. Legs, coxæ and trochanters very pale, femora light brown with a broad, indistinct subapical ring, the tip rather broadly pale; tibiæ and tarsi light brown. Wings subhyaline, the stigmal spot vary large, rounded-oval, dark brown, veins brown.

Abdominal tergites light yellow, the extreme tip and base of each segment conspicuously dark brown; sternites more uniformly dark brown. Hypopygium with the pleural pieces rather stout, the dorsal fleshy appendage long, slender, very pale; the ventral appendage is enlarged at its base and near the tip bearing a prominent chitinized tooth which is directed outward; at the tip of the lobe are several bristles and before the chitinized portion there is a shorter conical tooth on the outer or caudal margin of the lobe, this tooth being very pale, subhyaline. The ventro-lateral margin of the pleurite is produced caudad into a long, slender chitinized rod which is directed toward the chitinized tooth described above. The dorsal gonapophyses (see Fig. 6, *e*): are very long, slender, straight, lying parallel to one another and diverging only at the tips which are more chitinized. The guard of the penis (*g*) is very long, slender, extending about to the point of divergence of the dorsal gonapophyses. The ventral gonapophyse (*f*) is rectangular with two short teeth at the tip. The whole organ is recurved cephalad and the tips lie against the flaring margin of the 9th sternite.

Female, similar to the male but larger, the yellow color of the abdominal tergites not so apparent.

Holotype, male, Alajuela, C. R.; alt. 3,100 ft.; Sept. 15, '09 (Dr. P. P. Calvert).

Allotype, female, near Cartago, C. R.; alt. 5,000 ft.; Dec. 15, '09; south slope of Irazu, over mud (Dr. P. P. Calvert).

Paratypes, male, with the holotype in the author's collection. Female, Laguna near Cartago; Feb. 26, '10.

Type in the collection Acad. Nat. Sci. Phil.

*Gonomyia recurvata* differs from its nearest described relatives, *amazona* Alexander and *pleuralis* Williston in the male hypopygium, the two chitinated appendages to the pleurites, the extremely elongate and straight dorsal gonapophyses and the remarkable recurved ventral gonapophyse.

**Gonomyia (Leiponeura) calverti**, new species.

*Puella* group; basal antennal segments tinged with brown; male hypopygium without a recurved ventral hook; ventral portion of the hypopygium with two rounded, flattened lobes each of which bear 8 or 9 chitinated teeth.

Male, length, 3.4 mm.

Male.—Rostrum and palpi brown; the enlarged basal segments of the antennæ brown, not orange, flagellum light brown.

Mesonotal præscutum very light grayish brown without distinct markings; the pronotum, a narrow lateral margin to the præscutum and the median line of the scutellum yellowish; scutum and postnotum light brown; scutellum yellow, more brown at the base. Pleuræ without distinct stripes. Halteres light brown, the knob yellow. Legs, light yellowish brown, the individual segments scarcely darkened at tip. Wings subhyaline with iridescent reflexions, veins brown, stigma lacking.

Abdomen light brownish yellow, the tergites rather darker than the sternites. Hypopygium having the pleural pieces (fig. 7) long, slender, slightly curved, clothed with sparse long hairs; the tip is suddenly narrowed, more chitinated and ending in two long curved bristles. Ventrad of the pleurites is an enlarged cylindrical tube which is produced dorsally into a long obtuse point, and ventrally into two hand-like flattened organs armed with 8 or 9 chitinated teeth as shown in fig. 8, *d*; these flattened organs are directed ventrad and entad. From inside this genital chamber, near the dorsal wall project two subchitinated elongate flattened appendages (*c*).

Holotype, male, Alajuela, C. R.; alt. 3,100 ft.; Sept. 15, '09 (Dr. P. P. Calvert).

Type in the collection Acad. Nat. Sci. Phil.

This species is similar to *puella* Williston in its pleural and wing patterns but the basal segments of the antennæ are suffused with brown and the hypopygium is very different from that shown in Williston's figure<sup>1</sup> which shows a prominent recurved ventral hook.

#### Tribe LIMNOPHILINI.

Genus **LIMNOPHILA** Macquart.

**Limnophila guttulatissima** Alexander.

One female from Cartago, C. R., along a ditch on Feb. 26, 1910.

<sup>1</sup> Trans. Ent. Soc. Lond., 1896, pp. 288, 289, pl. 10, fig. 60 *a*.



## Tribe HEXATOMINI.

Genus **ERIOCERA** Macquart.**Eriocera exquisita** new species.

Wings uniform dark brown; color entirely reddish orange except the mesonotum which is dark brown; no black on abdomen.

Male, length, 11.6–13 mm.; wing, 11.5–12.4 mm.

Male.—Rostrum reddish brown; palpi short, basal segment orange, tip brown; first segment of the antennæ orange, second segment light reddish brown; flagellum dark brown; head orange, the frontal tubercle small, scarcely notched in front.

Pronotum light yellowish orange. Mesonotal præscutum dark chestnut brown on the sides, the middle line broadly paler, brightest, almost orange, in front, indistinctly divided by a median line; scutum dark brown; scutellum and postnotum yellowish orange. Pleuræ light orange yellow. Halteres black. Legs, coxæ yellow, trochanters, femora, tibiæ and tarsi brown. Wings uniform dark brown, veins brown. Venation as in fig. 5.

Holotype, male, Alajuela, C. R.; alt. 3,100 ft.; Sept. 9, '09 (Dr. P. P. Calvert).

Paratypes, 2 males, with the type.

Type in the collection Acad. Nat. Sci. Phil.; one paratype in the author's collection.

## Subfamily TIPULINÆ.

## Tribe DOLICHOPEZINI.

Genus **BRACHYPREMNA** Osten Sacken.**Brachypremna dispellens** Walker.

One male from Bonnefil farm, Rio Surubres, C. R.; alt. 700 ft.; Oct. 19, '09 (Dr. P. P. Calvert).

## Tribe TIPULINI.

Genus **TIPULA** Linnæus.**Tipula obliquefasciata** Macquart.

One female from Cachi, C. R.; Mar. 8, '10.

## EXPLANATION OF PLATE 2.

Fig. 1. Wing of *Rhipidia* (*Conorhipidia*) *punctipennis* n. sp.

Fig. 2. Wing of *R. (Rhipidia) costalis* Williston.

Fig. 3. Wing of *Rhabdomastix* (*Rhabdomastix*) *septentrionalis* n. sp.

Fig. 4. Wing of *Molophilus orion* n. sp.

Fig. 5. Wing of *Eriocera exquisita* n. sp.



Fig. 6. Hypopygium of *Gonomyia (Leiponeura) recurvata* n. sp. Ventral aspect; *a*, pleural pieces; *b*, dorsal apical appendage; *c*, ventral apical appendage; *d*, intermediate apical appendage; *e*, dorsal gonapophyse; *f*, ventral gonapophyse; *g*, penis-guard.

Fig. 7. Hypopygium of *G. (L.) calverti* n. sp. Dorsal aspect of the pleurite.

Fig. 8. Same as last. Lateral aspect of the end of the abdomen. *a*, pleurites from the side; *b*, dorsal wall of the genital chamber; *c*, gonapophyse; *d*, ventral arms.

Fig. 9. Hypopygium of *Molophilus orion* n. sp. Ventral aspect of the ventral apical appendage.

Fig. 10. Thorax of *Rhipidia (Conorhipidia) punctipennis* n. sp. Lateral aspect showing the conspicuous dorsal protuberance.

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## DESCRIPTIONS OF GALL MIDGES.

By E. P. FELT,

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The following descriptions of species are mostly based upon a remarkable collection made by Mr. C. P. Alexander in Fulton County, N. Y. Mr. Alexander succeeded in taking both sexes of the striking *Didactylomyia longimana* Felt, the female being previously unknown, and also obtained a series of the peculiar *Karschomyia viburni* Felt, the female of which had not been recognized before.

***Colpodia americana*** new species.

This species is described from a male taken by Mr. C. P. Alexander August 14, 1909, on the east shore of Woodworth's Lake in the Adirondacks, altitude 1,550 feet. This form is related to *C. trifolii* Felt. It is larger in size, differs in coloration and exhibits a marked divergence in the structure of the genitalia.

Male.—Length 1.2 mm. Antennæ more than twice the length of the body, sparsely haired, fuscous yellowish; sixteen segments, the fifth with a stem twice the length of the basal enlargement, which latter has a length one-half greater than its diameter. Palpi; first segment with a length about four times its diameter, the second as long as the first, stouter, the third a little longer than the second, the fourth one-half longer than the third, more slender. Mesonotum light brownish yellow. Scutellum and postscutellum whitish yellow. Abdomen fuscous yellowish, the apex recurved dorsally. Halteres and